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Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-22, 25 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 fails to clearly set forth a Markush group of constituents suitable for (A). Claim 1 fails to set forth that the “low molecular mass” recitation inline 4 refers to monomeric organic compounds containing at least one group that can be activated with actinic radiation. The phrase "said oligomeric and polymeric compounds containing at least one group which can be activated with actinic radiation" is confusing. Does applicant intend to recite “wherein said oligomeric organic compounds and said low molecular mass polymeric organic compounds contain at least one group that can be activated by actinic radiation”? If so, it should be so stated. Claim 1 further fails to recite what kinds of "air-drying" materials are suitable members of the (A) group. If applicant intends to recite that an “air-drying, oxidatively-drying alkyd resin” is one member of the Markush group, it should be stated in the claim as “actinic radiation, and air-drying, oxidatively-drying alkyd resins”. If applicant intends to recite that an air-drying alkyd resin and an oxidatively-drying alkyd resin are two different members of the Markush group, it should be stated in the claim as “actinic radiation, air-drying alkyd resin and oxidatively-drying alkyd resins”. The definition of (B) in claim 1 is confusing because the claim sets forth acidic esters of monophosphoric acid “with at least one compound (b1)” wherein b1 is a compound containing at least one hydroxyl group and at least one group that can be activated by actinic radiation but

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does not recite what compound the polyphosphoric acid is reacted with to obtain an acidic ester. It is suggested that the definition of (B) should read “acidic esters of polyphosphoric acid reacted with at least one compound (b1) and acidic esters of monophosphoric acid reacted with at least one compound (b1), wherein compound (b1) is a compound containing at least one hydroxyl group and at least one group that can be activated by actinic radiation”. The recitation “at least one kind of nanoparticles” should read “at least one kind of nanoparticle”.

With respect to **claim 2**, it is not clear what is intended by “organically bonded diphosphorus pentoxide”. What is the diphosphoric pentoxide “organically bonded” to? With respect to **claim 3**, there is no antecedent basis in claim 1 for the recitation “low molecular mass organic compounds” because claim 1 merely recites “low molecular mass” in line 4. With respect to **claim 5**, there is no antecedent basis in claim 1 for the recitation “air-drying and oxidatively drying alkyd resin” because claim 1, as written, recites a Markush group in which “air-drying” and “oxidatively drying alkyd resin” are two different members of the Markush Group. With respect to **claim 14**, there is no antecedent basis in claim 1 for the recitation “reactive diluent (A)” in line 4. It is suggested that the claim should read “The coating material as claimed in claim 1 wherein the constituent (A) comprises a mixture containing, based on the total weight of the coating material, of 5-40% by weight of at least one low molecular mass ...alkyd resin (A)”. **Claim 18** should recite, in line 6, “oligomeric binders other than the oligomeric constituent (A)”. **Claim 26** is indefinite because it depends from canceled claim 23. It is not clear what coating material applicant intends to claim as a primer coating.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-22, 25 and 26 are rejected under 35 U.S.C. 102(a) as being anticipated by WO 2004/050776. US 7,384,989 is relied upon for translation of WO '776. See the Examples and the claims. The features of claim 2 are disclosed in column 9, lines 57-65. With respect to nanoparticles and the mixture of acrylate components (A) set forth in instant claim 14, see column 10, lines 9-42. Claim 21 specifically sets forth nanoparticles as additive (E).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-13, 15-22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chisholm et al (6,998,425) in view of Takase et al (6,440,519). Chisholm et al disclose UV curable acrylate coating compositions comprising at least one nanoscale filler. With respect to **claims 13 and 16**, Chisholm et al teach silica and alumina in column 4, lines 61-65, and from 1 to 65 wt % filler in column 5, lines 31-39. See the compositions in the Examples. With respect to **claims 17-18**, Chisholm et al teach additives from column 5, line 39, to column 6, line 12. The difference from the instantly claimed composition is that Chisholm et al do not

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mention adding a (meth)acryloylphosphate constituent. However, Chisholm et al teach that the polyfunctional (meth)acrylate may be any monomeric or oligomeric molecule having an acrylic functionality of at least two (column 2, lines 35-38).

Takase et al disclose a photocurable adhesive for optical disk comprising a urethane (meth)acrylate oligomer, a (meth)acryloylphosphate, a multifunctional (meth)acrylate compound and a photoinitiator. With respect to **claim 15**, Takase et al teach that (meth)acryloylphosphate compound in an amount from 0.1 to 30 wt % in the composition provides adhesive properties with metal but not excessive so as to cause the product to exhibit increased water absorption and/or decreased adhesive properties under high temperature-high humidity conditions (column 9, lines 30-40). Additives are taught in column 13, lines 64-67; however, fillers are not mentioned.

It would have been obvious to one skilled in the art at the time of the invention to include a (meth)acryloylphosphate component, as taught by Takase et al, as one of the (meth)acrylates in the compositions disclosed by Chisholm et al. Chisholm et al provide motivation by teaching that that the polyfunctional (meth)acrylate may be any monomeric or oligomeric molecule having an acrylic functionality of at least two. Takase et al provide motivation by teaching that a (meth)acryloylphosphate component in an acrylate-functional composition confers superior adhesion properties, especially under high temperature-high humidity conditions. One skilled in the art at the time of the invention would have been motivated by a reasonable expectation of providing an acrylate-functional coating composition comprising a nanoscale filler, as disclosed by Chisholm et al, having improved adhesive properties, as taught by Takase et al. With respect

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to **claims 19-21**, the claims, as written, merely define the epoxide compounds **if present** as an additive, but do not require that the additive is an epoxide.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-22, 25 and 26 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 7,384,989.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-21 recite the same constituents of the compositions as set forth in the instant claims except for nanoparticles and claim 24 recites addition of at least one kind of nanoparticle to make the pigment dispersion. It would have been obvious to one skilled in the art at the time of the invention to include the nanoparticles employed in the process set forth in claim 24 of US '989 in the compositions set forth in claim 1 of US '989, thus arriving at the instantly claimed

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compositions. The comprising language in the instant claims encompasses the acidic, corrosion-inhibiting pigment based on polyphosphoric acid set forth in the claims of US '989.

Conclusion

Allard et al (7,790,802), having a 371 filing date of 11-26-2007) is cited as art of interest. The following references disclose dental compositions comprising an acrylated phosphate, nanoparticles and solvents: **Chen et al (7,767,731)**, **Qian (7,946,850)** and **Qian (7,963,769)**.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Arai et al (5,069,929)** disclose rust-preventive coating compositions comprising (A) a polymer having a Tg not lower than 5⁰C, (B) one or more unsaturated group-containing polymerizable compounds, (C) an acrylate-functional organic phosphate of the formula shown in the Abstract. The polymerizable compound B can be a polyester (meth)acrylate, polyurethane (meth)acrylate, epoxy(meth)acrylate or monomeric or oligomeric polyacrylate-functional compound (columns 6-7). Other additives may be used but fillers are not specifically mentioned. **Brinkmeyer et al (4,687,709)** discloses radiation curable ethylenically unsaturated phosphoric acid ester dispersing agents. The dispersing agents are reaction products of phosphorus pentoxide with a tertiary amine and an acrylic acid ester and/or oligo acrylate. Brinkmeyer et al teach that the dispersing agents ensure uniformly fine agglomerate-free distribution of pigments that improves surface smoothness in magnetic recording carriers. See the compositions in Examples A through C. **de Majistre et al (3,754,972)** disclose acrylated phosphate ester useful as adhesion promoters in radiation sensitive coating compositions. Acrylic compositions comprising various acrylate-functional compounds are taught in column 5. Nanoparticles are not mentioned.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN W. BERMAN whose telephone number is (571)272-1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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